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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,732	05/11/2001	Ralph R. Dammel	2001US304	6502

7590

09/25/2003

Sangya Jain  
Clariant Corporation  
70 Meister Avenue  
Somerville, NJ 08876

EXAMINER

THORNTON, YVETTE C

ART UNIT

PAPER NUMBER

1752

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/853,732

Applicant(s)

DAMMEL ET AL.

Examiner

Yvette C. Thornton

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-19, 21-25 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This is written in reference to application number 09/853732 filed on May 11, 2001 and published as US 2002/0187419 A1 on December 12, 2002.

#### *Response to Amendment*

1. Claim 20 has been cancelled. Claims 1-19 and 21-25 are currently pending.

The amendments to the abstract and claims are sufficient to overcome the objections set forth in the previous office action.

2. The applicant has requested clarification of paragraph 9 of the previous action. The said paragraph stated, "[t]he examiner does not view claims 2-3 as being limited to the choice of R<sub>5-14</sub> being an acid labile group or R<sub>7</sub> and R<sub>8</sub> being linked to form a lactone or anhydride, respectively. It is the examiner's position that the claim limitations would be met when any of the Markush groups of instant claim 1 are present". In other words, it is the examiner's position that claims 2 and 3 do not require an acid labile group or a nonaromatic group to be chosen. Therefore, the limitations of instant claims 2 and 3 are met when any other group of claim 1, such as a hydrogen or halogen group, is chosen.

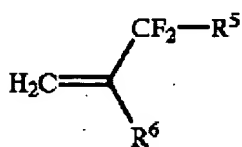
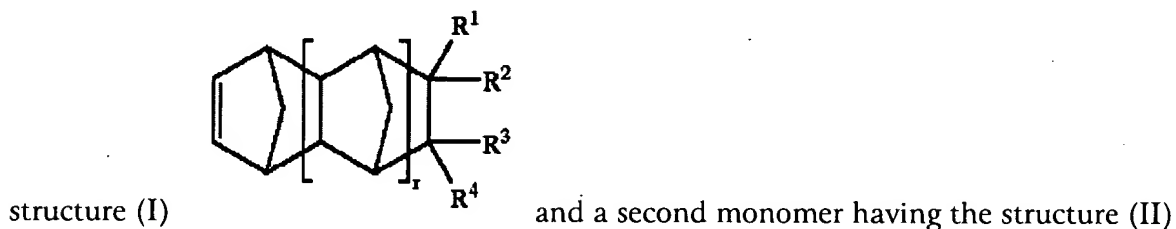
#### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

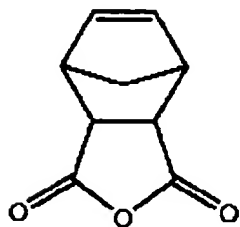
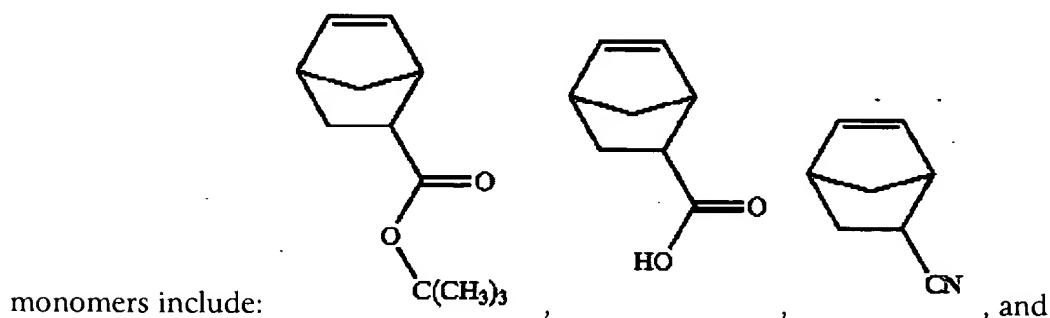
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 5-19 and 21-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Ito et al. (US 6509134 B2). Ito teaches a resist composition comprising a norbornene fluoroacrylate copolymers prepared by copolymerization of a first monomer having the



wherein  $r$  is 0 or 1;  $R1-4$  are independently hydrogen or non-hydrogen substituents;  $R5$  is F, methyl,  $CF_3$ ; and  $R6$  is  $-COOH$ , CN, an amide, an acid-inert ester or an acid cleavable functionality (c. 6, l. 10-59). Examples of the norbornene



(c. 9, l. 1-55). It is the examiner's position that the said monomers

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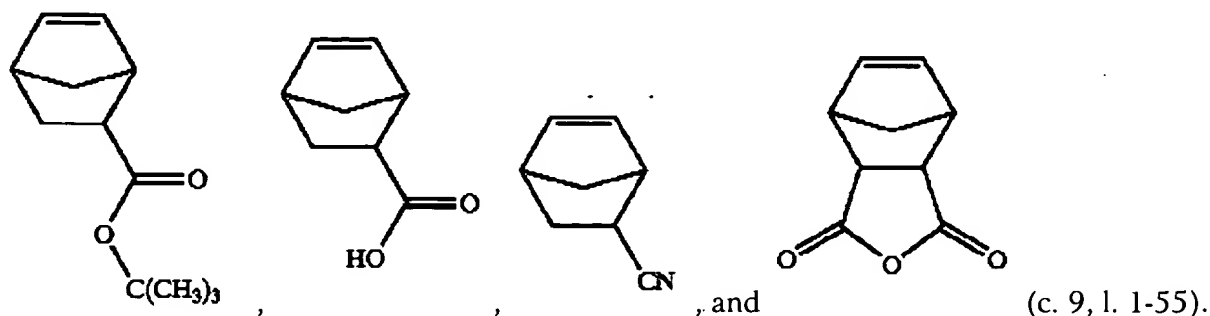
represent the preferred embodiments and meet the limitations of R7 being an acid labile group (t-butoxycarbonyl), a carboxylic acid, a cyano group (CN) and wherein R7 and R8 combine to form an anhydride. It further teaches that the taught copolymer may comprise different monomer units each having the structure (X), (XI) and/or one or more other monomers such as hydroxystyrene, alkyl (meth)acrylates, styrenes and vinyl acetates. The additional monomers are present in minor amounts (e.g., 5-30%). The said polymer will generally comprising about 5-40 mole % of structure (X) and about 95-60 mole% of structure (XI) (c. 10, l. 48-c. 11, l. 20). The resulting copolymer typically has a number average molecular weight in the range of approximately 500-50,000, generally in the range of approximately 1,000-15,000 (c. 11, l. 42-45).

5. The second component of the taught resist composition is photoacid generator such as onium salts, aromatic diazonium salts, sulfonium salts, diaryliodonium salts and sulfonic acid esters of N-hydroxyamides or imides (c. 11, l. 48-c. 12, l. 46). The said composition may also comprise suitable dissolution inhibitors which exhibit strong etch resistance and display good thermal stability (c. 12, l. 64-c. 13, l. 35). The remainder of the resist composition is composed of solvent and may additionally include customary additives such as dyes, sensitizers, stabilizers, acid-diffusion controlling agents, surfactants and plasticizers (c. 14, l. 37-42). Examples of suitable solvents include ethoxyethylpropionate (EEP) propylene glycol methyl ether acetate and ethyl lactate (c. 14, l. 60-c. 15, l. 12). A wide variety of compounds with varying basicity may be used as stabilizers and acid-diffusion controlling additives. They may include nitrogenous compounds such as piperidines, pyridines, amides and imides (c. 15, l. 25-57).

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6. The process for generating an image comprising the steps of (a) coating the substrate with a film coating the taught composition; (b) imagewise exposing the film to radiation and (c) developing the image. Preferably before the film has been exposed to radiation, the film is heated to an elevated temperature of about 90-150°C for a short period of time, typically on the order of about 1 minute. The dried film is imagewise exposed to radiation. The radiation may be UV, electron beam or x-ray. UV is preferred, particularly deep UV having a wavelength of less than 250 nm. After the film has been exposed, the film is again heated to an elevated temperature of about 90-150°C for a short period of time, typically on the order of about 1 minute. The third step involves development of the image with a suitable solvent. Suitable solvents include an aqueous base preferably tetramethylammonium hydroxide (TMAH) or choline (c. 15, l. 63-c. 16, l. 52).

7. Example 1 exemplifies the synthesis of  $\alpha$ -(trifluoromethyl)acrylonitrile which meets the limitations of claimed formula (1) wherein R1 and R4 is hydrogen and R2 is fluoroalkyl and R3 is CN (c. 17, l. 60-c. 18, l. 35). Although, Ito fails to exemplify a combination of  $\alpha$ -(trifluoromethyl)-acrylonitrile and the preferred norbornene compounds, one of ordinary skill in the art would readily envisage a copolymer comprising the preferred  $\alpha$ -(trifluoromethyl)acrylonitrile and any of the preferred norbornene compounds such as:



*Allowable Subject Matter*

8. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: review of the prior art failed to teach and/or suggest the specific compounds of instant claim 4 in combination with claimed formula (2).

*Response to Arguments*

10. Applicant's arguments with respect to the instant claims have been considered but are moot in view of the new ground(s) of rejection.

11. The examiner notes that the amendment to the claims was sufficient to overcome the rejection of the instant claims over the prior art reference of Fryd et al. (US 6503686 B1).

*Conclusion*

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

13. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action.

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In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 703-305-0589. The examiner can normally be reached on Monday-Thursday 8-6:30.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet C. Baxter can be reached on 703-308-2303. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

16. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1495.

yct  


September 11, 2003

  
JANET BAXTER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700